O'BRIEN®

A Product of Hi-Vac® Corporation

OWNER & OPERATORS MANUAL HYDROJETTERS™

Hydrojetter™ Model: 7040-SC

Serial Number: OBM-XXXX

Provide the above numbers to Hi-Vac when ordering parts

Phone: (740) 374-2306
Toll Free: (800) 638-1901
e-mail: sales@obrienmfg.com
www.obrienmfg.com

We appreciate your business and would like to Thank You for your recent purchase of an **O'Brien Hydrojetter**.

Your unit is built with **QUALITY** and is built to pass the test of time.

Please refer to the manuals included with your O'Brien regarding the maintenance and care of the pump, engine and unit.

It is important that you return the Warranty Registration Card that is included with your owner's manual. Filling out and returning the Warranty Registration Card to Hi-Vac Corp. will enable you to begin your service contract.

Once again, thank you for your purchase. If you should have other sewer equipment needs in the future, we hope that you will continue to depend on Hi-Vac Corp.

Please call Hi-Vac Corporation's Technical Service department with your service or operation questions. Toll Free phone number (800) 638-1901.

To find out more about our quality products, visit our web site at www.obrienmfg.com.

Company Overview & General Sewer Cleaning Information

Your new O'Brien unit is the latest model developed in over 50 years of producing sewer cleaning equipment.

Depending on your pump, over 2,500 psi water pressure can be generated. This pressure is directed through the hose to a nozzle, which is propelled into the sewer line by a rearward directed force of water. Just the right amount of water plus pressure is needed to effectively clean the pipe and neither high pressure nor large amounts of water alone will do the job.

With just the right combination at your disposal, you will find the jet nozzle will carry the weight of the hose into the pipe. With the penetrator installed (we recommend that your cleaning begin with the penetrator nozzle) it should penetrate most blockages of grease, sand, mud etc. that clog the line.

Normally, the penetrator nozzle is used to scour the inside of the pipe. The actual cleaning of the pipe is done as the hose is being retracted from the pipe onto the reel. You will note that this brings out the source of the blockage. Little or no cleaning is done while entering the sewer either with the penetrator or other nozzles. Therefore it is very important that when retracting the hose a slow steady speed is used. Many times it is necessary to repeat this slow retracting process to thoroughly clean the pipe.

Hi-Vac's years of experience in developing and using various pressures and flows has not succeeded in being able to cut roots by pressure alone. Although some manufacturers state that extremely high pressure will remove roots, Hi-Vac has not been able to confirm or verify these statements. Instead, Hi-Vac offers the patented original water powered root cutter unit.

When any root systems are encountered, we highly recommend the O'Brien Root Cutter machine, which not only cuts any roots in the system but other blockages such as starch and grease build-ups. The Root Cutter also is an aid in indicating broken or caved-in tile pipe or sewers.

Before operating the unit read the enclosed engine and pump manuals carefully and review the safety information in great detail.

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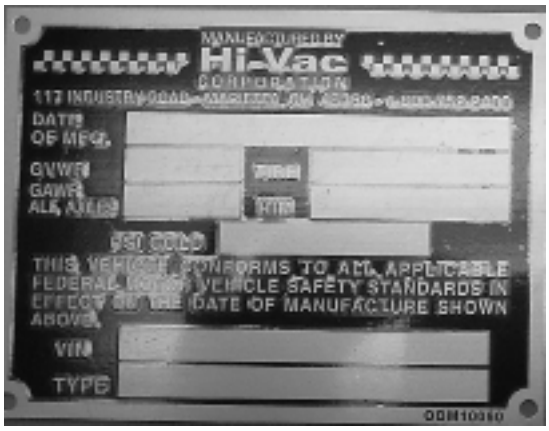
Warranty Registration Instructions

Immediately upon receiving:

- Examine the unit for damage. Notify the carrier at once with any claims.
- The Warranty/Registration card must be filled out and mail back to Hi-Vac Corp. within ten (10) working days.
- The Hi-Vac Corp. vehicle identification tags are located on the left side of the trailer tongue, when facing the tow vehicle. These tags contain product identification information to be provided on the warranty/registration card. Record the following information here in the space provide. This information must be provided when filing a warranty claim or ordering parts.
- Information can also be found on the Unit ID Sheet located in front of the operations manual.



Date Purchased: _____

Model Number: _____ Serial No: _____

Pump Model: _____ Pump Serial Number: _____

Engine Model Number: _____ Engine Serial Number: _____

- **RETAIN THIS INFORMATION FOR FURTHER USE**
- **HAVE THIS INFORMATION WHEN FILING A WARRANTY CLAIM OR ORDERING PART**

Warranty

Each and every product manufactured by Hi-Vac Corp. is tested carefully prior to shipment to assure a high standard of quality and maximum operating efficiency. The following warranty is operative upon the receipt, by Hi-Vac Corp., of a properly completed and executed warranty registration card.

A. Hi-Vac warrants that trailer mounted sewer units, equipment, accessories and parts manufactured by Hi-Vac shall for a period of one (1) year from date of purchase be free from:
   1. Defects in material and workmanship.
   2. Defects arising from process of manufacturing.
   3. Defects in design thereof.

B. The foregoing warranty shall not apply to components supplied to Hi-Vac Corp. by other manufacturers. The purchaser is directed to contact said individual manufacturers nearest factory service center for repair or replacement of said components. Hi-Vac Corp., when necessary, will act as agent to secure adjustment. Purchaser is responsible for labor and freight of any return part/components.

C. In case of defects in material or workmanship or defects arising from processes of manufacture or design, such defects must become apparent in the machine, accessory, equipment, or part within (1) year from date of purchase. The extent of Hi-Vac Corp.'s liability under the warranty is limited to the repair of such defects or to the repair or replacement of any part, equipment, or accessory, which is defective in any such respects.

D. Hi-Vac Corp. shall, as to each defect, be relieved of all obligations and liability under this warranty if:
   1. The product is operated with any accessory, equipment, or part not specifically approved by Hi-Vac Corp. and not manufactured by Hi-Vac Corp. unless purchaser furnishes reasonable evidence that such installation was not the case of the defect.
   2. The product is not operated or maintained in accordance with Hi-Vac's operation manual furnished with said equipment.
   3. The product was modified, altered, or repaired without the approval of Hi-Vac Corp.
   4. The purchaser does not, within the applicable time period set forth in paragraphs A and C above; notify Hi-Vac Corp. of said defect. Disassembly of the product to correct the defect, removal of the defective accessory, new part(s) and reassembly of the product shall be at the purchaser's expense.
   5. Purchaser does not submit reasonable proof that the defect is due to a material embraced within Hi-Vac Corp.'s warranty hereunder.

Liability under this warranty is limited to parts and is furthermore limited to the replacement or repair of said parts returned, freight prepaid, to Hi-Vac Corp. Only parts deemed defective due to workmanship or a related defect will be warranted. An Authorization To Return (ATR) number and completed warranty evaluation form are required prior to the return of any part(s) to Hi-Vac. Under no circumstances is loss of time, revenue, or consequential damages covered
under this warranty.

Any part(s) returned without proper pre-authorization will be returned/refused. Technical service will supply the ATR. Please phone Technical Service @ (800) 638-1901 to obtain the proper authorization or with any other service related question.

Warranty Information

ENGINES
CLUTCHES
PUMPS
AXLES, LIGHTS & HITCHES
HOSES & HOSE REELS

There are several items on your equipment that are warranted by the original manufacturer. If warranty is needed, these items often require a certified technician at a local service center. The following directory is provided so that if you need assistance you may call and locate the nearest technician and service center to your location.

All clutches are installed and warranted by the engine manufacturer. Please contact the applicable engine manufacturer for a local service center if you have a clutch for warranty consideration.

Engines
John Deere (330) 239-2242
Kubota (740) 964-0089
Honda (800) 626-7326
Cummins (614)527-2832

Clutches
North American Clutch (800) 383-9204

Pumps
Giant (800) 633-4565
FEMyers (419) 281-9239
General (888) 474-5487

Axles, Lights & Hitches
Red Neck Trailer (309) 862-1000

Hoses & Hose Reels
Piranha (800) 250-5132
Parker Dayco (330) 296-1433
Poly-Flo (503) 493-0015
CoxReels (800) 269-7335
Hose-Trac (888) 489-8828
Reel Craft (800) 444-3134

Hi-Vac Corporation's Toll-Free Technical Service Number
(800) 638-1901

Warranty Frequently Asked Qoestions (FAQ)

Listed below are frequently asked questions about our warranty. This summary does not constitute a warranty. For full warranty details, refer to your official warranty supplied with your unit.

Question:
What is covered and for how long?
Answer:
Your O'Brien Hydrojetter is covered under warranty for a period of one year (12 months) from date of purchase. Hi-Vac Corp. bases the one year (12 month) warranty on the purchase invoice date. Only the original purchaser of the unit is covered. The warranty is non- transferable. Warranty does not include replacement of unit or use of spare unit under any circumstance.

Question:
What about the pump, engine or other parts not manufactured by Hi-Vac Corp. on my unit, what do I do about warranty on those items?
Answer:
There are several items on your unit that are warranted by the original manufacturer. If warranty is needed, these items often require a certified technician at a local service center. All clutches are installed and warranted by the engine manufacturer. Please contact the applicable engine manufacturer for your local service center if you have a clutch for warranty consideration. You may refer to the list on page 4 for a phone number to call for local service in your area.

Question:
What about my 'down time' if my engine or pump needs repairs– what will you compensate me for this?
Answer:
Hi-Vac Corporation will assist customers in receiving the assistance they need with engine, pump or other manufacturers, however, Hi-Vac Corp. does not compensate for down time.

Question:
How do I return a part for warranty consideration?
Answer:
Contact Technical Service – (800) 638-1901 to obtain a Authorization To Return (ATR) number. This number will be coded on your customer information and you will be asked to write this number on your shipping box.

Question:
When do I receive my credit?
Answer:
All parts returned with an ATR number are evaluated, upon receipt. Hi-Vac Corporation, in many cases, will have to return the part to a vendor for evaluation and/or credit. Upon the final disposition of the part, you will be notified as to the result. If credit is to be issued, you will receive credit on your account to be used towards future purchases.

Question:
Can you send a call-tag for my part?
Answer:
Hi-Vac Corporation does not issue call-tags for return of merchandise. The customer may send Hi-Vac the part(s) – via UPS, US Mail or freight company with the ATR# clearly visible on the outside of the package.

Question:
Will you send a technician to repair my unit under warranty?
Answer:
Hi-Vac Corporation strives for customer satisfaction and has a nation-wide network of Dealers/Distributors and Service Companies to contact. Hi-Vac will be happy to assist you with your service needs; however, we do not regularly send our technicians on service calls.

Towing Instructions

Trailer Hitch
Check rating of vehicles trailer hitch - Class IV - 6,000 lbs., 7,000 lbs., & 12,000 lbs.
Towing capacity

Vehicle GCWR (Gross Combined Weight Rating)
Towing capacity = GCWR minus vehicle weight minus cargo weight minus passenger weight.

Note: GCWR is provided on your vehicle or in your vehicle manual.

Vehicle Towing Capacity
Refer to your vehicle owners manual for listed trailer towing capacity.
Trailer towing capacity should equal GCWR (Gross Combined Weight Rating) minus vehicle weight minus cargo weight minus passenger weight and (vehicle) fluids weight.

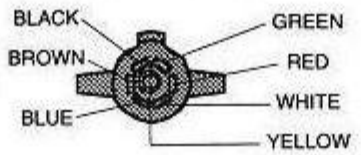
Wire the plug receptacle to your vehicle as shown below.

Note: The wire colors on the Hydrojet running lights are also indicated in Fig.1 for re-wiring to a different plug design.

Always use trailer lights.

7-WAY CONNECTOR WIRING DIAGRAM

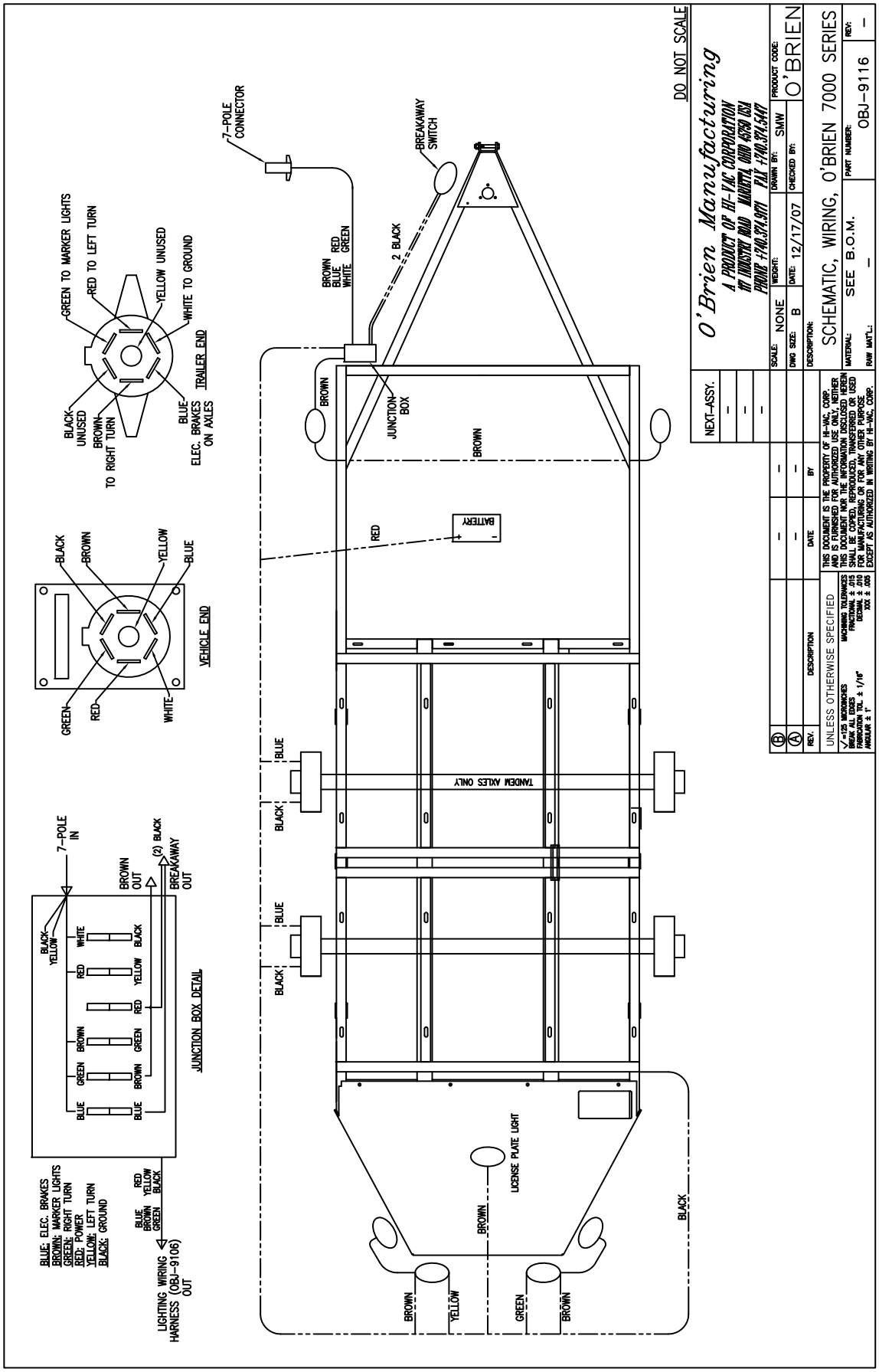
7-WAY MOLDED TRAILER CONNECTOR & CABLE



7 - WAY WIRING INDEX

Wire Color & Gauge	Molded Trailer Connector Terminal
White / 10 gauge	Common Ground
Blue / 12 gauge	Electric Brake
Green / 14 gauge	Tail & License
Black / 10 gauge	Battery Charge
Red / 14 gauge	Left Stop & Turn
Brown / 14 gauge	Right Stop & Turn
Yellow / 14 gauge	Center Auxiliary

Fig. 1


DO NOT SCALE
O'Brien Manufacturing
A PRODUCT OF HI-VAC CORPORATION
7-POLE CONNECTOR
BREAKAWAY SWITCH
BROWN BLUE WHITE
RED GREEN
2 BLACK
JUNCTION BOX
BROWN
BROWN
RED
BATTERY
TANDEM AXLES ONLY
BLUE
BLACK
BLUE
BLACK
LICENSE PLATE LIGHT
BROWN
BLACK
BROWN
YELLOW
GREEN
BROWN
GREEN TO MARKER LIGHTS
RED TO LEFT TURN
YELLOW UNUSED
WHITE TO GROUND
BLACK UNUSED
BROWN TO RIGHT TURN
BLUE ELEC. BRAKES ON AXLES
TRAILER END
BLACK
BROWN
YELLOW
BLUE
GREEN
RED
WHITE
VEHICLE END
7-POLE IN
BROWN OUT
(2) BLACK BREAKAWAY OUT
JUNCTION BOX DETAIL
BLUE: ELEC. BRAKES
BROWN: MARKER LIGHTS
GREEN: RIGHT TURN
RED: POWER
YELLOW: LEFT TURN
BLACK: GROUND
LIGHTING WIRING HARNESS (OBJ-9106) OUT
BLUE BROWN GREEN
RED YELLOW BLACK
NEXT ASSY.
SCALE: NONE
WEIGHT:
DRAWN BY: SMW
PRODUCT CODE:
DWG SIZE: B
DATE: 12/17/07
CHECKED BY:
O'BRIEN
DESCRIPTION:
SCHEMATIC, WIRING, O'BRIEN 7000 SERIES
MATERIAL:
SEE B.O.M.
PART NUMBER:
OBJ-9116
REV:
RAW MAT'L:
UNLESS OTHERWISE SPECIFIED
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Towing Instructions (cont.)

Towing

1. Position hitch coupler above trailer hitch ball.
2. Lower trailer tongue until ball rests in ball socket.
3. Be sure to lock the ball down then pin this with a safety bail pin.

CAUTION:

4. Connect breakaway cable solidly to bumper or frame of tow vehicle as close to center as possible. The cable must hang clear of trailer tongue and be long enough to permit short radius turns without pulling breakaway cable forward.
5. Make sure breakaway cable is in the released position with retaining pin in place.

   CAUTION: Do not use breakaway switch as a parking brake, as this will run down the battery on your jetter.

   Note: Check location of breakaway cable periodically during each trip. Accidental application will cause brakes to drag and heat up, causing failure.

6. Cross safety chains under tongue and securely attach chains to bumper or frame of tow vehicle.

   CAUTION: Safety chains must be used.

7. Fully retract hitch jack and remove caster wheel and/or skid plate. This will provide adequate ground clearance for transport.

8. Return high pressure reel to towing position or square with back of unit. Attach hose end to swivel fitting or recirculation system provided on back of trailer.

9. You are now ready to tow your O'Brien.

   CAUTION: Avoid sharp turns. This could bend, create extreme stress or fracture either the actuator or trailer tongue (if applicable).

   Note: Trailer is equipped with Electric or Surge Brakes.

2-5/16" Bulldog Hitch
Part #OBJ-1081TC

3" Pintel Hitch (Optional)
Part #OBJ-1081

Pump and Pressure System

The pump and relief valve are the heart of your O'Brien. They have been specially designed for use with cold water (140°F max.) for pipe jetting, but can provide useful water flow for many other cleaning jobs using the optional Washdown Gun and special attachments. The Triplex Ceramic Plunger Pump (each crankshaft revolution has to move a certain amount of water) uses 3 plungers (similar to pistons in an engine) to create water flow. Pressure is not created until the pump outlet is restricted with a valve or a nozzle. The pump, valving and hose can support up to 4000 psi working pressure depending on model that you have.

The regulator valve acts to direct the water flow to the water tank when the hose reel and hand gun valves are off or if nozzles provide too much restriction for total flow. Always use clean water to keep the regulator valve operating properly. The hose and nozzle are designed to allow full flow and the Washdown Gun operates at up to 1100 PSI max pressure. If leaks develop in the system between the relief valve and hose reel (or hand gun valve) you will hear intermittent engine surges in the bypass, as the bypass pressure gradually drops and is built up again by the pump. Tighten or otherwise repair the leaks for smooth running. Always stop engine and release pressure before any plumbing changes or repairs.

Because of the inherent hazards with high pressure, use only Hi-Vac Corp. authorized high pressure hoses and components when repairing your machine.

If nozzles become plugged, the regulator valve will direct some of the flow back to the water tank while providing constant pressures. If pressure is seen with normal engine speed, check and clean the nozzles. Reducing engine rpm will produce lower pressures to prevent the regulator valve from bypassing on and off.

High Pressure Hydrojetting

High pressure Hydrojetting is the utilization of high pressure water combined with sufficient water flow to remove debris in drain/sewer pipes. High pressure Hydrojetting can also be used to remove debris on surfaces.

A high pressure Hydrojetter consist of a pump, a motor or engine, a hose reel, a given length of hose and various assortment of nozzles.

A pipe is cleaned with a high pressure Hydrojetter by directing water pressure and flow through a nozzle. Controlled water pressure and flow propels a Hydrojetter nozzle through the sewer pipe allowing it to remove and wash away the obstruction.

Ideally, a sewer pipe is cleaned from the lower end of the pipe and the hose propels itself to the higher end of the pipe with the help of a nozzle. By slowly withdrawing the Hydrojet hose, the water pressure and flow cleans the line most effectively. When it is impossible to clean from the lower end of the pipe, the pipe must be water jetted several times to remove all the debris. A skilled operator can effectively clean a drain/sewer regardless of the obstacles in his/her way.

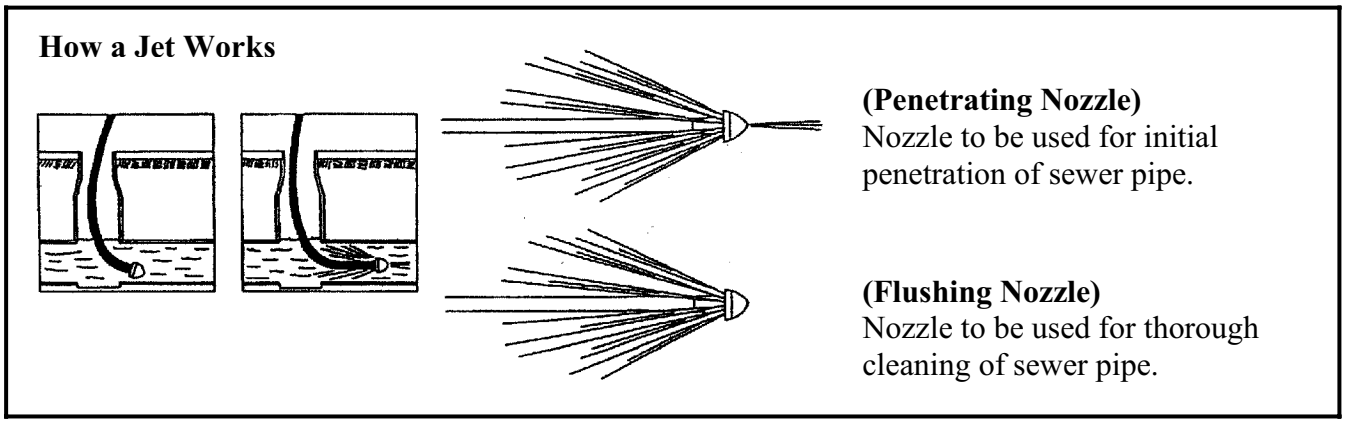

How a Jet Works
(Penetrating Nozzle)
Nozzle to be used for initial penetration of sewer pipe.
(Flushing Nozzle)
Nozzle to be used for thorough cleaning of sewer pipe.

Fig. 2

Hydrojet Tank Filling

Fill the water tank from a clean water source. Always flush rust out of hydrants before connecting fill hose. Hydrojetter can be filled using a 5/8” garden hose on a fill reel (optional) or using a fire hydrant fill (standard). Fire hydrant fill requires Fill Hose (P/N A176150).

Important Note: If the next 4 items are not followed, cavitation of the pump could occur and reduce operating efficiency and severely damage the pump.

- Use water temperatures under 140°F.
- Ensure that both water strainers are clean (check daily or as needed).
- We install ball valve after strainer, so end user cannot starve pump.
- The pump drain valve must be closed.

Engine Operating Procedures

Our O'Brien instrument control panels may have a Murphy Safety Gauge installed.

Start Up

- Check water tank level. Our Hydrojetters may be equipped with a Low Water Shut-Off switch that will prevent the engine from starting at low water levels. (Optional)
- Check fuel level.

  Note: Also Check engine and pump oil levels per manufacturer specifications.

- Be sure fuel valve is ON (If applicable).
- Turn high pressure reel supply "OFF" and disengage clutch (If applicable).
- Turn key to "Preheating (Glow Plug)" position until Glow Lamp turns off on instrument panel (If
- applicable).
  Note: No warm up required if ambient temperature is above 50° F or when the engine is warmed up.

- Hold in red relay button and turn key switch to crank position and start engine. (If applicable)
- Allow engine to warm up for several minutes.

Engine Shut-Down

- Idle engine down.
- Disengage clutch and turn H.P. reel supply valve to "OFF" position (If applicable).
- Allow engine to idle for 2 minutes.
- Turn "OFF" key switch.
- Turn the fuel valve OFF (If applicable).

Setting Up For Operation

Always position your Hydrojetter in the driest and safest place possible. Avoid high traffic areas and use flashers and safety cones. Position the Hydrojetter so that the hose can be pulled directly off the hose reel for use. Remember that jetting is most effective when you jet against the water flow. See Figure 3 for the recommended positioning of your Hydrojetter for best visibility during manhole work. Note that loose hose and damaging corners are minimized when the Hydrojetter is parked as shown.

When operating on unlevel ground, position trailer with the hitch (tank sump) end at the downhill side.

For non-manhole use, allow extra space for handling the hose before it is wound back on the hose reel or run the hose directly to the pipe inlet using extra hose guards to protect the hose from cutting when going around corners.

Warning: Do not unhitch or operate Hydrojetter unhitched upon unlevel ground.

When unhitching your Hydrojetter from the towing vehicle, always follow these steps:

- Disconnect ball hitch or pintle hitch by raising lever and jacking hitch up.
- Disconnect safety chains and light cord before driving away.

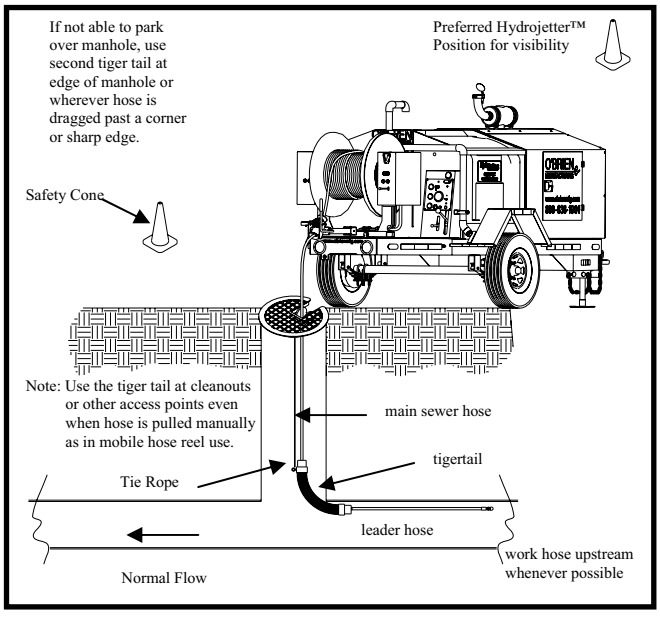

If not able to park over manhole, use second tiger tail at edge of manhole or wherever hose is dragged past a corner or sharp edge.
Preferred Hydrojetter™ Position for visibility
Safety Cone
Note: Use the tiger tail at cleanouts or other access points even when hose is pulled manually as in mobile hose reel use.
main sewer hose
tigertail
Tie Rope
leader hose
work hose upstream whenever possible
Normal Flow

Fig. 3

Hydraulic/Electric Operating Instructions

Reel hydraulic/electric can be used to feed off and to rewind hose on reel. Hose end should be secured to recirculation system or swivel fitting while transporting your Hydrojetter™.

Reel is hydraulically/electronically locked from rotating in neutral (position between hose in and out). Move hydraulic/electric control up to rewind hose on hose reel and down to power feed hose off hose reel.

The reel speed can be increased or decreased by adjusting the variable speed. Turn the variable speed control knob out to increase speed or turn knob in to decrease speed.

Operating Instructions

1. Check the engine oil and hydraulic oil levels.

2. Fill tank while watching sight gauge so not to overfill. If filling from a fire hydrant, it is important to flush the hydrant to remove rust and corrosives from the lines before filling the tank. Although O'Brien provides polyethylene water tank(s) with strainer basket, rust and foreign matter could get from the tank into the pump or valve, and damage the system. O'Brien machines come with a curbside fill location. This affords the operator protection from traffic when filling on busy thoroughfares. (Close main drain valve located at front right corner of tank) All locations are from a standing position facing back or instrument panel of machine.

3. When starting a cold gas engine, pull choke out and turn key clockwise (2010-JK,3510-E, 3510-FC). When starting a diesel engine with a glow plug feature, turn key clockwise to the on position then push black button on panel for 20 seconds. If engine still does not start repeat. Turn key clockwise to start engine (3515-FC). When starting a diesel engine with out the glow plug feature, turn key clockwise while holding red Murphy button in (3518-SC, 7030-SC, 7040-SC).

4. Engine should be started and warmed up for 3 to 5 minutes before applying any load.

5. Although your machine has the finest, toughest sewer-cleaning hose available, it is useful to protect the hose with a hose guide. Available and perhaps included with your machine is, an Upper Hose Guide, Lower Hose Guide, or a flexible Hose Guide (Tiger Tail), you may have other guides included with your machine and there may be other accessories available.

6. The hose reel must then be positioned over the manhole pipe to be cleaned.

7. Normal cleaning is started by using the penetrator nozzle, which should be attached at this time.

8. Before putting pressure to nozzle, unwind hose from the reel by using the reel control valve on the operator's panel. Care should be taken not to damage the hose by keeping it clear of the manhole sides.

9. Point of the hose nozzle should be pointed upstream into the pipe rather than downstream.

Operating Instructions (cont.)

10. Make sure water control valve lever is in correct position for cleaning.

    Note: The valve has two marked positions. One is marked High Pressure To Hose Reel, and the other position is marked Washdown Gun/Bypass (this position is for operating the washdown gun).

11. With the hose unreeled and pointed into the sewer or pipe, engage the pump by putting the clutch handle to the engaged position. The nozzle will now start to carry itself into the sewer line and penetration will begin. The correct method of cleaning is to extend the hose into the line and gradually and slowly retract it. During the retraction you will note that cleaning or flushing takes place.

12. Adjust engine throttle by using the push/pull cable control (desired pressure is shown on the pressure gauge). More throttle produces more pressure, which gives greater effort to drive the hose and nozzle into the line.

13. Unreel the hose, as needed allowing the nozzle to go further into the line. Short distances into the line are recommended on the first pass with slow retraction to flush the blockage of the line.

14. In large lines, or in lines with several clogs, repeated passages may be necessary to insure that the line is cleaned to your satisfaction.

15. When the pipe or line is cleaned, retract the hose and nozzle back just short of the end of the line. Reduce the throttle to near idle and turn water control valve to circulate, washdown gun position.

16. Disengage the clutch and reel in the cleaning hose with the hydraulic reel control.

17. Stop engine.

18. This completes the sequence that is normally used for water jet units

Note: O'Brien units all come std with a 20' contrasting color leader hose for your safety. This will help indicate how close the nozzle is to the pipe opening.

All machines have a low water warning, which shines brightly when water is low in the supply tank.

Do not rely on these gauges to maintain your water jet unit. Normal maintenance schedules must be followed.

Hydrojetter Operation Safety Precautions

WARNING! Read manual and supplemental(s) before operating your O'Brien. Read and become familiar with all safety precautions, pre-operation notes and details, operating instructions and manual operating instructions before operating your O'Brien.

WARNING! Inspect Hydrojetter before operation. Do not operate Hydrojetter if you suspect damage, wear or any abnormal condition.

WARNING! Keep operator and bystanders clear of area in which high pressure hose operates.

WARNING! Do not overload or abuse Hydrojetter unit.

WARNING! Do not operate Hydrojetter while on medications, narcotics, or while intoxicated. Always wear protective clothing and eye protection when operating equipment.

WARNING! Do not allow children to operate equipment.

WARNING! This equipment can be hazardous to the operator's safety, and only authorized personnel who have read and understand the installation and operating manual should be permitted to operate this units.

WARNING! Do not allow equipment to run unattended.

WARNING! This unit may conduct static electricity through the discharge nozzle, and is not designed for cleaning applications using combustible liquids, materials, or flammable gases. To do so could result in severe or fatal injury.

WARNING! Do not use any type of insecticide, toxic chemicals, or heat-activated chemicals that produce toxic fumes or explosive materials in the soap solution system of this equipment. Use only those detergents proven safe for human contact. Failure to do so could result in severe or fatal injury.

WARNING! Do not keep gun trigger open by mechanical means when using washdown gun.

WARNING! Do not stand or allow other personnel to stand in front of the cleaning gun nozzle and avoid contact with hot water discharge if connected to hot water source. To do so could result in severe bodily injury.

WARNING! Bleed off all pressure prior to removal of nozzles, hoses, or drain plugs.

WARNING! Position and secure hose, reels, and access doors before transporting your Hydrojetter.

WARNING! Accidental activation of control switch(es) may cause unintended operation(s).

WARNING! Maintenance and lubrication procedures must be performed as specified in this manual by qualified (authorized) service personnel.

WARNING! Replace missing, worn, or illegible decals.

Hydrojetter Operation Safety Precautions (cont.)

WARNING! Keep owner's/service manual with Hydrojetter at all times.

WARNING! Never Modify or alter an O'Brien unit.

WARNING! Do not use accessory devices not authorized by Hi-Vac Corp.

WARNING! Do not remove any guards or covers.

WARNING! **Failure to follow these safety precautions may result in serious bodily and/or property damage.**

Warnings

Read the safety and operating instructions before using any O'Brien product. Drain and sewer cleaning can be dangerous if proper procedures are not followed and appropriate safety gear is not utilized. Read the engine owners manual for instruction and safety precautions on engine operation.

WARNING! Gasoline is extremely flammable and is explosive under certain conditions.

Refuel in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.

Do not overfill the fuel tank (there should be no fuel in the filler neck). After refueling, make sure the tank cap is closed properly and securely.

WARNING! Before starting unit, be sure to wear personal protective equipment such as safety goggle or face shield and protective clothing such as gloves, coveralls or raincoat, or rubber boots with metatarsal guards, and hearing protection.

WARNING! Carbon monoxide exhaust and/or gasoline fumes from this equipment can create a hazarous atmosphere in confined spaces (which may include, but not limited to, manholes and septic tanks), closed garages or other areas which may not be properly ventilated. In particular, excess gasoline fumes can create an explosion hazard. Such hazardous atmospheres can cause death or severe injury. Do not operate this equipment in any confined space or area with inadequate ventilation. Operate this equipment only when located outdoors or in an open, well ventilated area.

WARNING! Insure the jet hose has been placed in the pipe (minimum of 6 feet suggested) before engaging the water pressure to prevent the hose from coming out of the pipe prematurely and causing injury.

WARNING! Always shut the water pressure off before pulling the hose out of the pipe. Use a leader hose to help insure the hose is not accidentally pulled out of the pipe while still under pressure. Shut off the water pressure when the leader hose is encountered. WARNING: Portions of the system can still be under pressure even if the unit is not operating.

Warnings (cont.)

WARNING! Never point the wash gun at anyone while operating the unit. Injury may result

WARNING! Drains and sewer can carry bacteria and other infectious micro-organisms or materials which can cause death or severe illness. Avoid exposing eyes, nose, mouth, ears, hands and cuts and abrasions to waste water or other potentially infectious materials during drain and sewer cleaning operations. To further help protect against exposure to infectious materials, wash hands, arms and other areas of the body, as needed, with hot, soapy water and, if necessary, flush mucous membranes with water. Also disinfect potentially contaminated equipment by washing such surfaces with a hot soapy wash using a strong detergent.

For any questions contact the company at the address shown below.

Hi-Vac Corporation
117 Industry Rd.
Marietta, Ohio 45750
Phone: (800) 638-1901
Fax (740) 374-5447
www.obrienmfg.com

Pipe Jetting Procedures

Equipment:

Although O'Brien Hydrojetters are capable of various high pressure cleanings, jetting pipes of 6"-24" (depending on the model you have) is typically the major work required of the jet. The hose reel is designed for outdoor applications.

For safety reasons, always operate with 2 people when the pipe entrance is away from your hydrojertter location; one person should stay near the Hydrojetter to control the machine operation while the other person works the hose and nozzle. The auxiliary hose reel should be used for remote control whenever the second person can not be seen or heard by the machine operator.

The sewer hose should always be replaced when wire or cord reinforcement can be seen because of a worn cover.

All nozzles are designed to match the pressure and flow performance of your Hydrojetter. They are key in efficient operation because they convert all of the engine and pump power to water speed for hose pull and for cleaning impact.

A penetrator and a flusher nozzle are standard equipment. See parts book for part numbers to order additional nozzles and nozzle holders. Nozzles holes will wear after several months of continuous use. If the system operating pressure gradually drops, try a new nozzle to check for wear. Check for nozzle plugging occasionally by removing the nozzle from the hose and holding it up to the light. Clean by inserting a small diameter wire if necessary. Plugged nozzles will cause poor hose pull even though the gauge pressure will show higher.

When Obstructions Are Encountered

When obstructions or corners are encountered it may be necessary to manually rotate the hose (See Fig.4) to enable feed through that area. The rotation will cause the jetting nozzle to jump over or around those areas. When it becomes necessary to manually rotate the hose to clear obstruction, any rotations in one direction must be followed by an equal number in the opposite direction to prevent kinks from building in the hose.

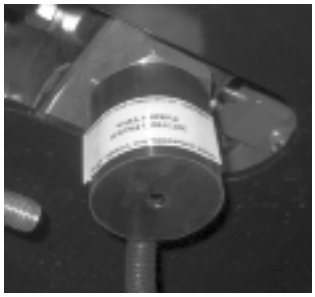
Fig. 4

Fig. 5

At times, it will be necessary to move the hose slightly in and out of the drain line to assist the jetting nozzle in clearing stubborn clogs, obstructions, or tight corners (See Fig.5.)

Pulsation (Optional)

Switch



Pulsator

Note: To activate the pulsator (located on bottom of water pump), push the toggle switch (located on control panel) either up or down. This switch is a momentary switch and must be held down when pulsation is required. Release the toggle switch to deactivate the pulsator.

Washdown Gun

Note: To use Washdown Gun do the following:

1. Connect Washdown Gun to end of 25' hose to connector.
2. Start at idle.
3. Put valve in Washdown Gun/bypass mode and engage clutch (if applicable).

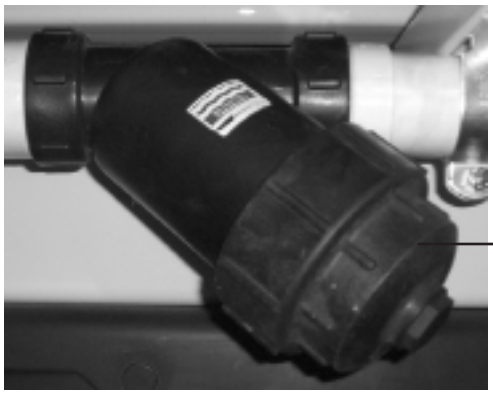
Caution: **HOLD WASHDOWN/WASH WAND WITH TWO HANDS AT ALL TIMES. Back pressure buildup on the wand/hand gun requires two hands firmly gripping the wand when the trigger is initially pulled.**

Caution: **Under no circumstances should you ever operate the Washdown Gun in the direction of any other person(s). To do so may cause serious damage to eyes or other bodily tissue and may even cause death!**

Cold Weather Protection/Winterization of the Hydrojetter

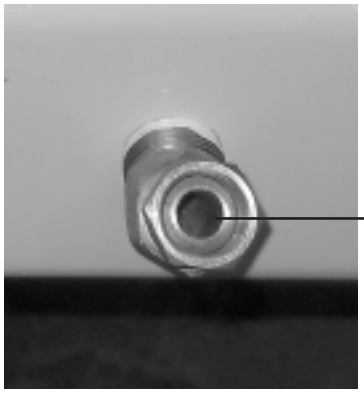
Drain Valve

1. Open two-inch ball valve & drain water tanks.



Strainer

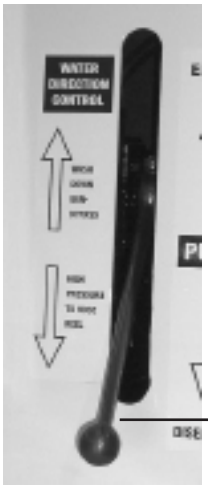
2. Remove cap and screen section from suction strainer to remove any remaining water.



Hose Connector

3. Assure hose is secure in the connector.

Cold Weather Protection/Winterization of the Hydrojetter (cont.)

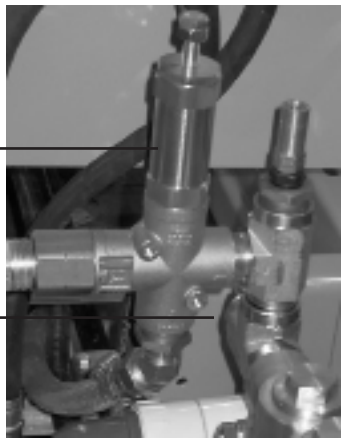


Control Valve Handle

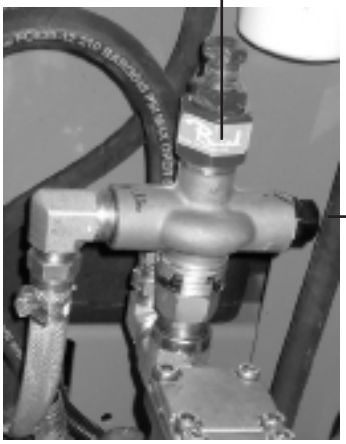
4. Move handle of directional control valve to the “Up” or “Washdown Gun-Bypass position.

Unloader

Plug



Relief Valve



Plug

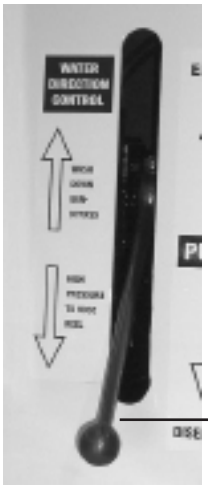
Blowout Chuck

5. Depending on model, remove one-inch plug in the tee under Unloader or from Relief Valve and insert one-inch Blowout Chuck.

Air Hose Connection

6. Hook up air hose (not shown) to Blowout Chuck and continue to blow out until all water is expelled from system.

Cold Weather Protection/Winterization of the Hydrojetter (cont.)



Control Valve Handle

7. Move handle of directional control valve to the “Down” or “High Pressure To Hose Reel” position and continue to blow out until all water is expelled from the reels.

8. When finished, complete the following steps:
   a) Remove air hose
   b) Remove Blowout Chuck and reinstall plug.
   c) Close two-inch drain valve.
   d) Replace cap and screen section on suction strainer.

Note: It is always advisable to store unit inside during severe/cold weather conditions.

Lubrication and General Maintenance

This section covers maintenance procedures not covered by the manufacturer's instruction manuals. Please follow the manufacturer's instructions for engine, pump and power take-off maintenance.

Lubrication

1. Hose reel shaft pivot bearings - grease zerk - every 25 hours - multi-purpose grease
2. PTO bearing - grease zerk - every 8 hours - multi-purpose grease
3. Trailer axle bearings - tighten & pack - annually - axle grease

Adjustment

1. High pressure pump belt - adjust as needed - every 40 hours
2. Brakes - adjust as needed - every 160 hours

Fluid Levels

1. Hydraulic fluid - check tank fill daily - fill with AW-46 fluid
2. Engine Oil - check tank fill daily - fill with 10-W30 oil
3. Water Pump – Oil - check tank fill daily - fill with 80-90 gear oil

Troubleshooting

As an aid in locating and correcting problems, which may occur in transit or while the unit is in operation, this section was developed to assist the operator in the diagnosis and repair of equipment failure. Prior to disassembly or removal of components, check the following list for a quick reference to possible problem areas.

Problem	Probable Cause	Solution
Pulsation	Obstructed or worn valve Worn nozzle Air leak in inlet plumbing Inlet suction strainer clogged	Check valves and seats for worn surfaces Replace with nozzle of proper size Disassemble, reseal, and reassemble Clean, use adequate size, check frequently
Low Pressure	Worn plunger assembly Abrasives inpumped fluid Severe cavitations Inadequate water supply Fouled inlet or discharge valves Worn inlet or discharge valves Leaky discharge hose Restricted inlet Air entering the inlet plumbing	Rebuild plunger assembly Install proper screen filter in suction line Install proper screen filter in suction line Install proper screen filter in suction line Clean inlet and discharge valve assemblies Replace worn valves Replace hose Proper size inlet plumbing Check for air tight seal
Pump runs rough or pressure low	Inlet restrictions Air leaks Stuck inlet or discharge valve	Clean out obstructions Replace worn valves Replace worn valves
Short packing life	Abrasives in pumped fluid Excessive pressure Excessive temperature Running pump dry	Install proper screen filter in suction line Check pressure Check fluid temperature Install thermal relief valve DO NOT RUN PUMP DRY
Strong surging at inlet and Low pressure on discharge side	Foreign particles in valves Worn valves	Check for smooth lap surfaces on valves seats Damaged valves cannot be lapped but must be replaced
Oil leakage from drain plug	Loose or worn drain plug	Tighten or replace drain plug
Loud pump knock	Worn or broken bearing or connecting rod	Replace bearings or connecting rods
Excessive crankshaft endplay	Worn main ball bearing	Replace ball bearing
Water in Crankcase	High humidity Worn Seals	Change oil at 3 month or 200 hour intervals Replace Seals
Oil leaking from crankcase shaft	Bad bearing Bad crankshaft seal	Replace bearing Replace crankshaft seal
Will not siphon chemical	Dirty or clogged chemical hose strainer Worn injector orifice Wrong nozzle in wand	Clean or replace strainer Replace orifice Use brass soap injector nozzle

Troubleshooting (cont.)

Problem	Probable Cause	Solution
Pump and motor RPM & pressure spike	Clogged nozzle jets	Clean jets and check water supply for debris
Low pressure or no pressure when using hand gun	Wrong nozzle in hand gun	Use steel high pressure spray nozzle
The Pressure and/or the Delivery Drops	Worn packing seals Broken valve spring Belt slippage Worn or Damaged Nozzle Fouled discharge valve Fouled inlet strainer Worn or damaged hose Worn or Plugged relief valve on pump Cavitation Unloader	Replace packing seals Replace spring Tighten or replace belt Replace Nozzle Clean valve assembly Clean strainer Repair/Replace hose Clean, Reset, & Replace worn parts Check suction lines on inlet of pump for restrictions Check for proper operation
Noisy Operation	Worn bearing Cavitation	Replace bearings, Refill crankcase oil with recommended lubricant Check inlet lines for restrictions and/or proper sizing
Rough/Pulsating Operation with Pressure Drop	Worn packing Inlet restriction Accumulator pressure Unloader Cavitation	Replace packing Check system for stoppage, air leaks, correctly sized inlet plumbing to pump Recharge/Replace accumulator Check for proper operation Check inlet lines for restrictions and/or proper size
Pressure Drop at Gun	Restricted discharge plumbing	Re-size discharge plumbing to flow rate of pump
Excessive leaking	Worn plungers Worn packing/seals Excessive vacuum Cracked plungers Inlet pressure to high	Replace plungers Adjust or Replace packing seals Reduce suction vacuum Replace plungers Reduce inlet pressure
High Cankcase Temperature	Wrong Grade of oil Improper amount of oil in crankcase	Giant oil is recommended Adjust oil lever to proper amount

Symptom	Probable Cause
Engine will not run	Fuel tank empty
Murphy Shutdown red button out on control panel	Check water level Check oil pressure Check coolant temperature
Low pressure or flow	Clogged inlet filter Jetting nozzle worn

Troubleshooting (cont.)

Electric Hydraulic Braking System	
Symptom	**Possible Cause**
Locking Brakes	Loose, Bent or Broken Brake Components Under adjustment Out-of Round Drums
Pulls to One Side	Incorrect Tire Pressure Unmatched Tires on Same Axle Restricted Brake Lines or Hoses Malfunctioning Cylinder Assembly Defective or Damaged Shoe and Lining One Side Out-of-Adjustment
Dragging	Improper Fluid Blocked Master Cylinder Parking Brake Cable Frozen Improper Lining Thickness or Location

Notes:

Troubleshooting Checklist

Please review the checklist for problems which may arise with your unit.

Hydrojetter not pulling up the line.

Items to Check	Question	Checked
Engine	Is engine at full throttle?	
System	Is system at full PSI?	
Ball Valve	Is the ball valve shifted completely to high pressure to hose reel?	
Nozzle	Is the nozzle badly worn or clogged?	
Tiger Tail	Is a tiger tail being used?	
Banjo Screen	Has the banjo screen been cleaned?	
Grade	What is the grade you are attempting to jet? i.e. Uphill, downhill, level	
Obstructions	Are there obstructions in the line or tile such as:	
	Roots?	
	Collapsed Line?	
	90° turn in line?	
	Dead End?	
	Dead Animal?	
	Untrimmed Lateral?	
Hose	Are there any kinds or collapsed spots in high pressure hose?	
	Is the hose in good shape?	
	Is the hose the correct size for your unit?	
Debris	Has any debris been run through system – Sand, Silt, Rust?	
Water Supply	Where are you getting your water supply - is it clean water?	
Unloader	Remove top of unloader and see if ball and seat have grooves or gaulting	
Tank	Look into tank - are there any obstructions	
Engine to Pump Belt	Does the belt from the engine to the pump need to be adjusted?	
Nozzles	Are your nozzles purchased from Hi-Vac Corporation?	
Accessories	What accessories are you using with your Hydrojetter:	
	Hose Guide with Fins?	
	Camera System?	
	Tandem Nozzle?	
	Etc?	
Hours on Unit	How many hours are logged on your Hydrojetter?	
Pump	Is the pump ready for servicing?	

Suggested Training Outline for Trailer Mounted Jetter

1) First Make a Complete Safety Check
   a. Be sure all wheels are chocked
   b. View safety gauges in insuring safety checks are where they belong
   c. Check engine motor oil
   d. Check hydraulic oil
   e. Check pump filter – clean if necessary
   f. Check water level

2) Fill Tanks with Water
   a. Flush hydrant or hose to remove rust and corrosives before letting water flow into tank.
   b. Close main drain valve located at front right corner of tank
   c. Do not overfill. Watch sight gauge.

3) Starting Engine
   a. When starting cold gas engine, pull choke out, turn key clockwise (3510-E, 3510-FC)
   b. When starting a diesel engine with a glow plug feature, turn key clockwise to the on position then pu black button on panel for 20 seconds if engine still does not start repeat. Turn key clockwise to start engine (3515-FC)
   c. When starting a diesel engine with out the glow plug feature, turn key clockwise while holding red Murphy button in (3518-SC, 7030-SC, 7040-SC).

4) Positioning of Trailer
   a. Set up barricades and lights
   b. Park trailer at curb
   c. Swing hose reel to correct side
   d. Be sure hose is running through hose guide
   e. Attach a leader hose

5) Operation of Jetter
   a. Attach a penetrator nozzle to hose to begin your cleaning.
   b. Attach remote switch or foot pedal
   c. Unwind hose
   d. Put nozzle in drain first
   e. Point hose nozzle upstream
   f. Engage water control lever to High pressure to hose reel
   g. Extend hose into line to clean
   h. Retract hose for flushing

6) Pressure
   a. Adjust engine throttle to the desired pressure
   b. Read pressure gauges to insure proper pressures
   c. Increased throttle speed increases pressure
   d. Increased throttle also increases reel speed
   e. Reel speed is also adjusted at reel speed switch on panel

7) Job Completed
   a. Retract the hose to just short of the end
   b. Reduce the throttle to idle
   c. Turn water control valve to re-circulate
   d. Clean end of hose with gun
   e. Reel in the remaining hose using the reel control
   f. Stop engine

How To Use The Parts & Accessories Manual

Hi-Vac Corp. will supply all part and/or accessories you require as quickly as possible. In order to do, we must have information from you, including O'Brien model number and Serial number.

Please record the serial number of your machine in the space provided below:

O'Brien Model:_____

Serial Number:_____

To order parts, look through the pictures until you find the part you require or an indication of where the part should be. Using the item number from the picture, go to that number on the next page and check the description to determine if it is the part you desire.

Using the part numbers, please contact your O'Brien salesperson.

Thank You,

Hi-Vac Corporation
117 Industry Rd.
Marietta, Ohio 45750
Phone: (800) 638-1901
Fax (740) 374-5447
www.obrienmfg.com

Special Note

We at Hi-Vac Corporation wish to help you maintain the safety, performance and appearance of your new O'Brien . This manual is intended only as an operating guide. A separate parts and accessories manual will ship with your purchase of your O'Brien. The parts and accessories manual you will receive depends on the O'Brien model you purchased. Look in the table of contents of this manual for the page numbers for important safety precautions, operating instructions and troubleshooting aids.

Though much of your O'Brien is user serviceable, trained professional mechanics may be needed with pump, plumbing, engine, lights, hitch and axle experience.

- Contact Hi-Vac Corporation for all engine repair or troubleshooting.
- Contact Hi-Vac Corporation or the Pump Repair Manual for all pump repair or troubleshooting.
- All plumbing repairs should use O'Brien parts. Substituting parts is dangerous and voids Hi-Vac Corporation warranties. Use standard pipe sealing compound or "Teflon"® tape to seal all joints except swivel joints and hose nozzles (o-rings, seals and tapered seat designs) do not require sealing materials.

Water Pump Important Information

Your GIANT Pump runs in a counterclockwise position.

The following information is important to follow in the care and maintenance of your GIANT pump.

- Use 80-90 synthetic gear oil.
- Add an additional 10% gear oil.
- Since the pump will be spinning in the opposite direction, it will need more oil to properly lubricate all components.
- GIANT Industries and Hi-Vac Corporation stand behind this recommendation 100%.

For further information see installation instructions in your GIANT pump manual.

Failure to comply with this condition voids the warranty.